

**METHOD AND APPARATUS FOR DETERMINING A STATE OF A VARIABLE
RESISTIVE LAYER IN A MATERIAL STACK**

Abstract of the Disclosure

5 A method and an apparatus for detecting a number of variation in resistance
within a material stack in response to a scanning and injection of a non-contacting
electron stream into a material stack, the material stack having a first conductive contact
layer, a variable resistive layer, a fixed resistive layer, and a second conductive contact
layer, and the variations in resistance within the material stack being based on one of a
10 plurality of resistive states of the variable resistive layer. The method also includes
generating two magnetic fields within a transformer, the transformer being operatively
coupled to the first and second conductive contact layers and generating a differential
output signal within the transformer based on the two magnetic fields, the differential
output signal being associated with one of the plurality of resistive states.

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